PROPOSED MINUTES: TO BE ADOPTED AT NEXT MEETING

OpEval I-Lab 1 and TestOps Working Group Meeting Summary
13-14 June, MITRE/CAASD

1. ADMIN:

1.1 *ATTENDEES*

James McDaniel	James.McDaniel@faa.gov
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Paul Purcell	Paul.Purcell@cns-aviation.com
Paul Fontaine	paul.fontaine@faa.gov
Ray Yuan	Ray.Yuan@jhuapl.edu

1.2 *AGENDA*
- ❷ Tuesday (6/13): AM I-Lab OpEval demonstration: PM Cost/Benefit & HF WG meeting
- ❷ Friday (2/12): TestOps WG Meeting: Detailed work on flight test matrix/scenarios, TestOps WG action items as needed

1.3 *NEXT MEETING*
- ❷ Conference call 6/21
- ❷ WG meeting at ILAB2 (July 25 –27)

2. I-Lab Issues (from debrief after AM runs):

❷ Departures need to turn 190 from 17L & 330 from 35L
❷ I-Lab has limited surface movement capability- surface scenarios can be scripted but no 'real-time' control of aircraft on the airport surface is available
❷ Night 35L was not demonstrated but will be available for I-Lab II
❷ Needs to be fixed: Some aircraft on initial climb-out from the runway had excessive climb rates
❷ Need to provide leader line control to the controllers
❷ Need to determine if outside covey is fly over waypoint vs. turn early at waypoint
❷ Cockpit turn rate needs to be increased

3. Cost/Benefit & HF Discussion

3.1 *COST BENEFIT*

➷ Need for baseline data to **measure system improvement.** How to obtain it is TBD e.g., month? of radar data (compare day and night sort) from SDF can measure average and variance threshold/FAF spacing
➷ Two types of baseline requirements identified: 1) Historical 2) Turn on/off CDTI equipment
➷ Need specifics/priorities from cost/benefit group on exactly what historical data is required from SDF. Some types identified: Taxi-in time, flight time in terminal area during takeoffs and departures, number of controller transmissions during final approach
➷ Baseline discussion regarding turning on/off equipment tabled till Test Ops discussion
➷ Timeline: Jan '01 First look at investment analysis / Jan. '02 final product

3.2 *HUMAN FACTORS*

❷ Peter Hwoschinsky reviewed draft outline of HF appendix to the TEMP
- It was agreed to remove sections on S-1 Issues Paper, AFS Issues, & Cert. Report since documents don't currently exist. Documents will be added if they become available.
- Need to identify who will reduce onboard data collection (i.e., pilot inputs). Eric Nadler first guess but issue is still open.
- Need to include section on Tower data collection. Eric Nadler will work tower.
- Flight Reports will be grouped into single section. No one is required to write flight report but they will be documented, as they become available.   At OpEval-1, two certification flight reports were available as well as Navy P-3 report.
- Question on why additional simulation facilities are included (e.g., NASA 747-400). Peter Hwoschinsky- other simulation facilities are included as potential resources and do not imply that they are required for OpEval 2.
- Peter Hwoschinsky took action to revise outline based on above comments.
❷ Oscar Olmos reviewed HF aircraft matrix provided by Rob Strain/Art Smith. Several comments/questions on aircraft matrix
- Build 3 (ABX & FDX) can record button pushes but certified version of Build 4 (UPS) will not record button pushes.
- What data does MX20 collect? Paul Purcell- it records position. Jim Walton took action to determine if MX-20 can record 'button-pushes'
- Defense Concept Associates Aircraft (Cessna 210) will not have WAAS upgrade

- Will all aircraft have a two pilot configuration? Oscar Olmos took action to check with Rob Strain/Art Smith.
- Why do some aircraft only have departure spacing under the primary application? Oscar Olmos explained that at this point we weren't sure what applications those specific aircraft wanted to focus on for OpEval –2 so a general heading of departure spacing was used since everyone should be able to conduct this application.
- Oscar Olmos took action to revise HF aircraft matrix based on comments and provide to HF group

❷ Discussed observer requirements for OpEval-2
- How many observers would we need? Reviewed aircraft matrix and estimated 18 –22. Kurt Joseph- there are currently 14 names submitted to him as potential observers.
- We need to coordinate with Non-CAA aircraft to see who will provide their own observers. Navy P-3, NASA 757, & Collins (Julie Garloch?) will have their own observers. Kurt Joseph took action to begin coordination.
- If participants provide own observers, HF subgroup needs to ensure consistent data is being collected

❷ Next Steps for HF Subgroup
- Prepare 'draft' questionnaire/debrief and observer forms (pilot & controller) for use in I-Lab II (July 25 – 27). SDF Controllers and Flight crews will be provided in I-Lab II for 'dry-run' of data collection tools.
- Prepare 'draft' experimental design (e.g., ind. variables, # of runs) and submit to Test Ops group for review.

4. Test Ops Discussion

4.1 *SUMMARY FROM OCG-2 (JUNE 1 –2)*

NOTE: This section is a summary from a previous OCG meeting and was not part of the I-Lab I discussion. It is provided as an indication of the overall status of the Test Ops work to date.

❷ OpEval operations will occur primarily on the West Runway. We are currently proposing day (17R) and night (35L) operations
❷ Controller on West runway (17R/35L) will vector only 'OpEval' aircraft. Normal day-to-day 'non-OpEval' traffic will be handled by the East controller and will land on the East runway (17L/35R).
❷ Reviewed proposed flight periods for OpEval (OpEval_Flight_Periods_v1.1). Flight periods are tentative:
  - Oct. 25 Flight crew training/OpEval brief
  - Oct. 26 – 28 Five (3 day/2 night) three hour flight periods proposed
  - Oct. 29 OpEval Debrief/Back-up Day
  - Oct. 30 Flight period (Public Event)

4.2 *FLIGHT TEST MATRIX*

❷ Oscar Olmos reviewed flight test matrix v1.0
- Flight test matrix will outline specific flight crew and controller tasks to support ADS-B/CDTI applications. 3 separate flight test matrices will be developed to define tasks associated with 3 levels of CDTI available at OpEval (Build 3/4, MX20, Collins 5 ATI).
- Test Ops will complete three draft versions (due June 28)

4.3 *APPROACH SPACING*

❷ What is objective of approach spacing? Trying to reduce spacing variability at runway threshold. Request for ConOps for OpEval applications. Oscar will provide.

❷ Cost/Benefit: Two survey requests: 1) Safety survey during OpEval to estimate improvement indirectly 2) User cost savings survey to ascertain pilot confidence? (need clarification from cost/benefit)

❷ Two levels of approach spacing identified
   - Procedural answer: Basic CDTI to support 'STARS' type of approach (e.g., at this point slow to this speed).
   - Technology answer: Advanced CDTI that provides speed guidance to flight crews (limited to final approach)

❷ Discussed approach spacing scenarios:
   - Two patterns proposed for different approach spacing capabilities
      - Basic CDTI: Outside covey w/ primarily CAA aircraft. Jim Walton will talk to Al and look at potential modifications
      - Advanced CDTI: Inside covey w/ Tech. Center, Navy, & Collins aircraft. Requesting 15 to 20 mile final for these aircraft. ATC- should be no problem.
   - Looked at CAA aircraft launching first with Advanced group departing 5 minutes after last CAA aircraft departs. First advanced CDTI aircraft will follow last CAA aircraft.
   - What distance at runway threshold are we trying to acquire? Group agreed to look at 4 miles for both levels of approach spacing.
   - Are we doing low approaches or full stops? Concern last year that low approaches may have skewed data.   Group- If distance at runway threshold is 4 miles than low approaches shouldn't be a problem (lead aircraft far enough away). We should do low approaches.


"*ELJAY*" (20nm final)

MAIZE

Tech., Navy, Collins Aircraft

CAA Aircraft

BLGRS

10 nm

5 nm

CHRCL

DAMEN
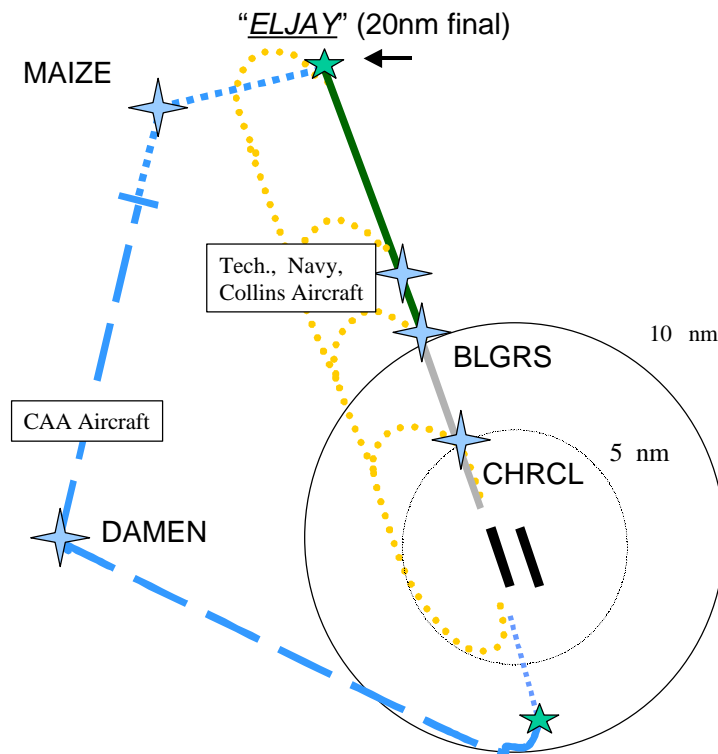
❷ Request for baseline data.
  - Historical Data- Paul Fontaine will coordinate SDF data for spacing and communication. Tom Tierney- need to be aware of outliers in data that may skew the spacing data.
  - Turn on/off CDTI- Several proposals were discussed to look at CDTI on/off
    - Flight crews fly approach with CDTI turned off and flight crews judge spacing visually
    - CDTI turned off and ATC trys to deliver spacing
    - Look at what data I-Lab simulation can provide
  - Turn on/off CDTI question has not been resolved and will need further discussion
❷ Request for mixed equipage scenarios. Reviewed mixed equipage definition w/ respect to OpEval-2- 1) Non-ADS-B equipped aircraft being vectored to East runway that will not be displayed on CDTI 2) UAT only and Modes S only aircraft will not be able to see each other. Why look at mixed equipage? May impact controller for call sign procedure and flight crew with respect to confusion (e.g., see visually but not on display). Oscar will review aircraft matrix and identify potential mixed equipage scenario.
❷ End-to-End Performance & Interoperability: Request to look at UAT and VDL4 interference levels. Jim McDaniel/Bob Nichols will look at what VDL4 is available (could be as simple as bench testing).
❷ OSA: Discussion of Failure Modes (e.g., message spoofing)- will not be deliberately failing equipment at OpEval-2.
❷ Certification: Truth testing of ADS-B (especially on CAA aircraft) will help certification process. Oscar will look at availability of Ashtec? Z12 and how it can fit into OpEval.
❷ Certification: Issues of display location, crew workload, and display clutter were identified and will be addressed as part of HF effort (Note: age vs. distance request deleted from list of issues).
❷ Operational Approval: Pilot operational procedures and checklists will be provided for each application. Request Ray Yuan clarify what is meant by pilot compentency (Issue: How will one evaluate pilot competency in the testing of each pilot's ability to perform each application?)
❷ For OpEval-2, are we looking at providing ATC with indication that ADS-B is degraded? Currently not part of OpEval-2 planning but flight crews are provided with indication of degraded system and can inform ATC via normal voice channels.
❷ Approach Spacing evaluation will include different Vref speeds

4.4 *FINAL APPROACH AND RUNWAY OCCUPANCY AWARENESS*

❷ Where can our surface scenarios be run? ATC- avoid SE corner of the airport since that will be our only point for taxiing aircraft back from RWY 17L.
❷ GA aircraft will be located at FBO in NE corner of the airport. We know we'll have good ground station coverage of Wast side but may also want East side for GA aircraft taxiing from FBO. Bob Nichols will look at surface coverage once ground station installed (won't know till last August)
❷ Vern Battiste reviewed some incursion scenarios that we can look at for OpEval (most frequently occurring types of incursions, MIT Lincoln Laboratory, 1994):

Landing; Departing on Same Runway
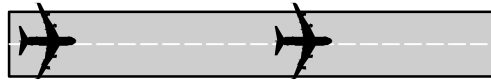
Departing; Taxi Crossing
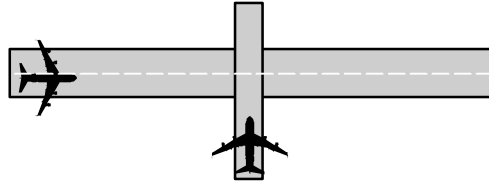
Landing; Taxi Crossing
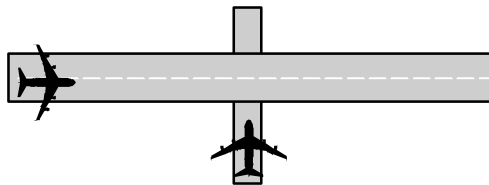
❷ We can use van for 'bad' bogey. Paul Fontaine- 1) need to make sure there is an 'out' for these scenarios 2) why not use one of the airplanes instead of the van? Still need to work outs specifics. For OpEval-2, will not plan on doing first scenario (landing/departing same runway).

5. ACTION ITEMS

#	Action Item	Point of Contact	Status
1	Identify specific cost/benefit historical data requirements for SDF (note: see action item # 11 and coordinate)	Jim Walton	Open
2	Update HF outline based on I-Lab comments and distribute to HF group	Peter Hwoschinsky	Closed- HF outline has been revised and provided to HF group.
3	Determine if MX-20 can be modified to support recording of button pushes	Jim Walton	Closed- MX20 will not have capability to record button pushes but will record position
3	Modify HF aircraft matrix based on I-Lab comments and distribute to HF group	Oscar Olmos	Closed- HF aircraft matrix has been updated and provided to HF subgroup
4	Determine single pilot vs. two pilot configurations for aircraft	Oscar Olmos	Open
5	Identify Non-CAA aircraft who will be providing their own observers	Kurt Joseph	Open
6	Prepare Draft HF Observer and questionnaire debrief forms for use in I-Lab II	HF Subgroup	Open
7	Prepare draft experimental design and submit to Test Ops for review	Eric Nadler/Vern Battiste	Open
8	Complete 3 flight test matrices	Test Ops (Oscar Olmos/Al	Open

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		Groves)	
9	Distribute ConOps for OpEval applications	Oscar Olmos	Open
10	Review outside covey with Al (basic CDTI) and modify as appropriate	Jim Walton	Open
11	Gather spacing and voice data for SDF / coordinate with Jim Walton	Paul Fontaine	Open
12	Review aircraft matrix and identify mixed equipage scenario	Oscar Olmos	Open
13	Look at capabilities for VDL4 & UAT testing	Jim McDaniel/Bob Nichols	Open
14	Identify resources for ADS-B truth testing and how it can be used for OpEval	Oscar Olmos	Open
15	Clarification of pilot compentency issue	Ray Yuan	Open
16	Identify surface coverage for East side of airport	Bob Nichols	Open